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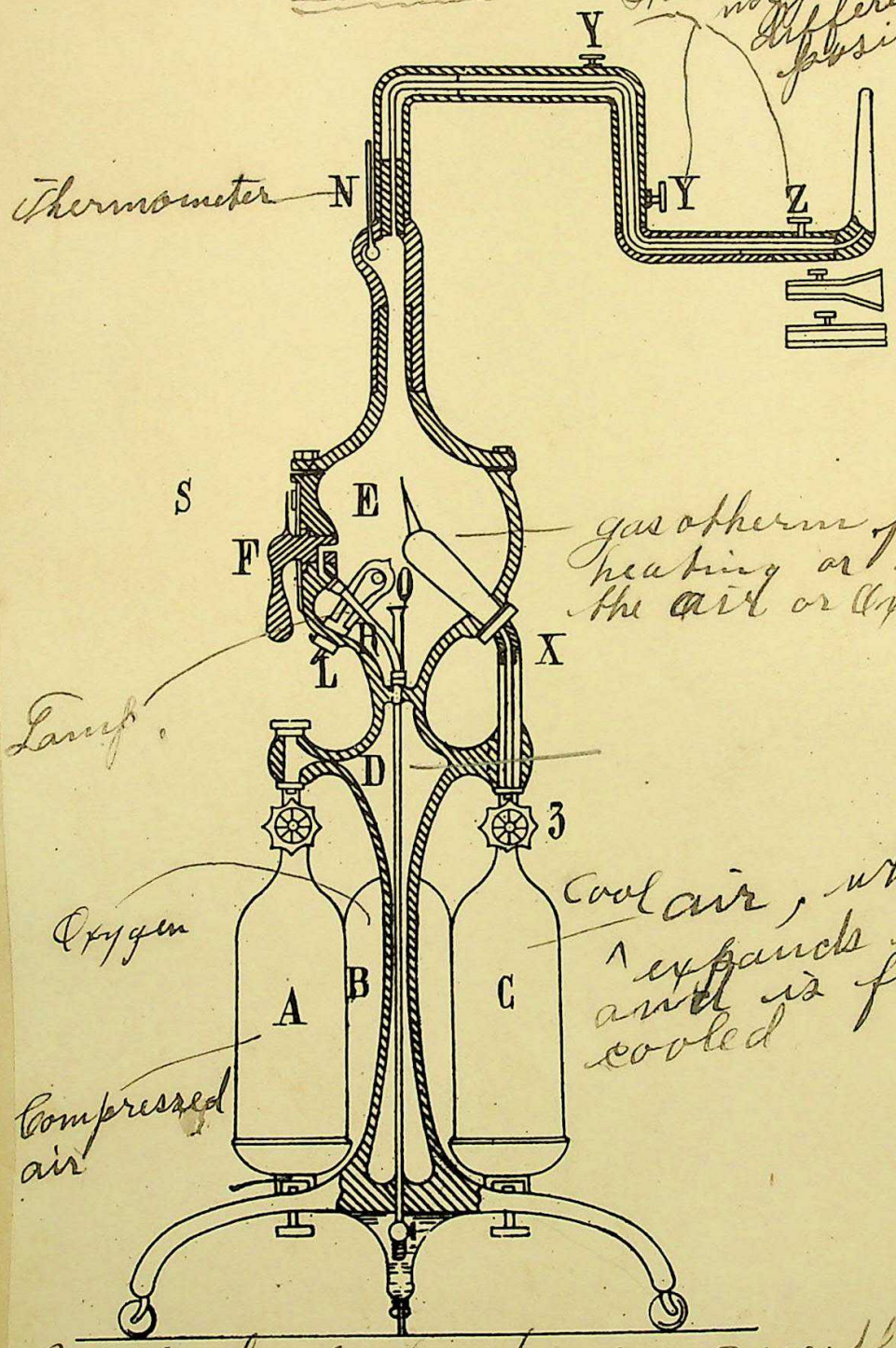
For adjusting nozzle in different positions.



gas otherm for heating or cooling the air or Oxygen.

Lamp.

Cool air, which expands in E and is further cooled

Oxygen

Compressed air

Method of producing anesthesia by lowering the temperature of a particular zone or area where the operation is to be performed.

Malby & Sons, Photo-Litho

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PATENT SPECIFICATION

154,619

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Complete Accepted: June 2, 1921.

COMPLETE SPECIFICATION.

An Apparatus for Obtaining Local Anæsthesia.

I, François Joseph Fabret, of 6, Avenue de Verdun, Nice, France, a citizen of the French Republic, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Anæsthetics have, since the time of the discoveries made by Horace Wells, Morton, Flourens, and others, greatly assisted in relieving the pain and curing the ailments of sufferers. Anæsthetics as a rule are not devoid of danger and local anæsthetics are detrimental and sometimes inefficient. Dentine for instance, has been hitherto anæsthetised with either excessive or imperfect agents. The pain caused by the irritation of dentine or pulp of a tooth is deadened by soaking the hyperesthesied tissues with a composition based on oil of cloves, creosote or phenol in which cocaine hydrochloride is dissolved. After dressing cement is applied to the tooth to protect the cavity against traumatisms. The soothing is however temporary and when the decayed tooth is treated and scraped either by hand or by drill, the excision of the tissues of the dentine produces an acute pain which few are able to bear and which has hitherto been avoided by the use of numerous substances which led to the deadening of the tissues of the dentine and the tooth.

Injections into the main portions of the upper and lower maxillary nerves have been attempted to obviate this serious drawback but they involve very complicated steps. Novo-cocaine has been injected at a point, level with the apex of the tooth to be treated; some of the results have been satisfactory, but failures were frequent which produced intoxications and serious trouble.

Repeated injections are detrimental and the following case may be given as an example. When a person has numerous caries on the stem of a plurality of teeth the pain is felt even when breathing and the pain is often rendered unbearable when an instrument is used. Ordinary anæsthetics cannot be used because they would have to be administered a number of times to complete the treatment of all the teeth. The use of anæsthocaine injections, which has been proved so far to be the best local anæsthetic cannot be used for the same reason. The decalcification of the dentine in such cases produces mental depression and the use of the ordinary anæsthetic causes intoxication either at once or later. Ethyl chloride may be used, but this is very painful and few patients only can bear it applied to the exposed dentine. Compositions based on arsenious acid may also be used which deaden the sensibility of the pain but destroy the dentine, the pulp and the tooth produce acute attacks of pulpitis and periostitis. Thus no mild and safe anæsthetic for the dentine has been hitherto available.

According to the present invention an almost ideal condition of things is created without rendering the patient completely unconscious, without the use of injections or any medicinal substance. Analgesia, for which such considerable research work has been done, is nevertheless obtained. The invention consists in gradually lowering the temperature of a pre-determined zone where the operation is to be performed which, when completed is gradually raised so as to restore the circulation.

The invention is more particularly described with reference to the accompanying drawing which shows one method of carrying the invention into effect.

The steel container A is filled with compressed air and B with oxygen. The compressed air passes through a chamber E hereinafter called the gaso-therm and is adapted to be heated and cooled at will. The air at a predetermined moment is mixed with oxygen which at the second stage of the operation passes in the pure state.

The operation of the apparatus is as follows:—

The compressed air container A is opened and the air after passing through the expansion chamber D flows through the pipe R which terminates in the tap S. The flow of gas is controlled by means of this tap and the handle F, the gas escaping into the gasotherm E. This air is heated by a lamp L. When the temperature is 37.5° C. the hot air is slowly projected on the centre to be anæsthetised. The temperature slowly falls owing to the draught brought about by the pressure and when it reaches 20° C. the lamp is extinguished. The cock 3 of the container C is then slowly opened so that a jet of cold air at −40° C. cools a member projecting into the gasotherm E which is cooled in turn. The escaping vapours are evolved into the atmosphere of the globe in order to increase the cooling. Any other refrigerating agent may be used, in this case it passes through the opening Q into the gasotherm E.

The thermometer N gradually reaches zero. The degree of cooling is obtained by trial since it varies according to the parts or regions to be anæsthetised. As soon as the temperature reaches zero, the operation may be commenced but the temperature has to be maintained at zero during the whole of an operation. For a tooth the temperature may be lowered to −10° C. As soon as the operative treatment is commenced care must be taken to shut off the compressed air and to open the oxygen, so that a pure and antiseptic jet is obtained which is beneficial to the operation. When the latter is completed, a sudden return to normal temperature is very painful and must be avoided. There is no disagreeable feeling if the steps taken previously are repeated in inverted order. A jet of oxygen at 40° C. may even be maintained for a few minutes. The patient feels nothing disagreeable at any moment.

This method of anæsthetising is very quick: it may be completed in five minutes and may be extended indefinitely; the return to normal temperature takes place in three minutes. No acid is used with the apparatus; the projecting nozzle may be placed in any desired position relatively to the centre to be anæsthetised, owing to telescopic joints which may be adjusted by means of the screws Y, Y^1, Z. The source of cold air may be derived from any source and the operator will choose it to fit the space available in a medical or dental room.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An apparatus for obtaining local anæsthesia in which a jet of gas is heated by suitable means and applied to the centre to be anæsthetised and thereafter gradually cooled until the temperature reaches 0° C.

2. An apparatus as claimed in Claim 1 in which the local anæsthetising gas is led into a chamber in which it is first heated by means of an electric lamp or the like and thereafter subjected to the cooling action of a liquified gas or the like cooling medium.

3. An apparatus as claimed in Claims 1 or 2 in which the oxygen is led into a reservoir formed by an outer and an inner casing, the oxygen passing from the reservoir to the inner part through a coil which form the wall of a third tube through which the cooling gas is evaporated which action reduces the temperature of the oxygen passing through a nozzle on to the centre to be anæsthetised.

4. An apparatus as claimed in Claims 1, 2, or 3 in which the gases forming the anæsthetising means pass through a tap which depending upon its position, regulates the composition of the anæsthetising gas.

5. An apparatus for obtaining local anæsthesia substantially as described or substantially as illustrated in the accompanying drawing.

Dated this 1st day of December, 1920.

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